

## Supplementary Material

### Application of Exogenous Ethylene Inhibits Postharvest Peel

#### Browning of ‘Huangguan’ Pear

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#### 1 Supplementary Table

**Supplementary Table 1.** Effects of ethylene (50  $\mu\text{L/L}$ ) on titratable acidity (TA), total soluble solids (TSS) and firmness of ‘Huangguan’ pear flesh

	Storage time (d)		
	0	100	200
TA (%)			
control	0.164 $\pm$ 0.004	0.123 $\pm$ 0.006 <sup>a</sup>	0.114 $\pm$ 0.007 <sup>a</sup>
air		0.120 $\pm$ 0.003 <sup>a</sup>	0.112 $\pm$ 0.003 <sup>a</sup>
ethylene		0.129 $\pm$ 0.005 <sup>a</sup>	0.122 $\pm$ 0.007 <sup>a</sup>
TSS (%)			
control	11.17 $\pm$ 0.15	11.73 $\pm$ 0.33 <sup>a</sup>	10.93 $\pm$ 0.23 <sup>b</sup>
air		11.83 $\pm$ 0.25 <sup>a</sup>	11.23 $\pm$ 0.23 <sup>ab</sup>
ethylene		12.27 $\pm$ 0.31 <sup>a</sup>	11.47 $\pm$ 0.21 <sup>a</sup>
Firmness ( $\text{kg/cm}^2$ )			
control	3.61 $\pm$ 0.18	3.31 $\pm$ 0.02 <sup>ab</sup>	3.15 $\pm$ 0.06 <sup>a</sup>
air		3.27 $\pm$ 0.06 <sup>b</sup>	3.17 $\pm$ 0.10 <sup>a</sup>
ethylene		3.43 $\pm$ 0.08 <sup>a</sup>	3.21 $\pm$ 0.04 <sup>a</sup>

Control: fruits were rapidly cooled at 0°C; air: fruits were first placed at 20°C for 8 h, then held at 0°C; ethylene: fruits were first treated with ethylene (5  $\mu\text{L/L}$ ) at 20°C for 8 h, then held at 0°C. Data are expressed as mean  $\pm$  SD (n = 3). Values in a column marked by the same letter were not statistically different ( $p > 0.05$ ).

To examine long-term effects of ethylene treatments on the fruit quality, the firmness, TA and TSS were measured using the pears harvested in 2013. The pears were randomly divided into 3 groups, including the control, 0 and 50  $\mu\text{L/L}$  ethylene treatment (18 fruits/replicate and 3 replicates/group). After treatment, pears were packed with foam sleeves, placed into trays wrapped with plastic film and stored at 0°C with RH 70%~80%. Samplings were taken at storage days of 0, 100 and 200.

For TA, TSS and firmness analysis, 6 fruits were randomly picked from each replicate. For TA measurement, 5 g of fruit pulp were used and extracted with distilled water (25 mL), for 30 min. Then the mixture was filtered and 10 mL of the solution was titrated with 0.01

mol/L NaOH to pH 8.2. TA was expressed as percent malic acid. Fruit juice was collected onto a digital refractometer (ATAGO PAL-1, Tokyo, Japan) for TSS measurement of Brix. Flesh firmness was measured at the equator on four side of the skin-removed fruit, using a hand-held penetrometer (Wanger Instruments, US) with 8 mm plunger diameter. Firmness was the mean value of four independent readings for each pear and expressed as kg/cm<sup>2</sup>.